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PRESS CONFERENCE ON THE FUTURE VISION FOR EXPLORATION

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SPEAKER: SEAN O'KEEFE, NASA ADMINISTRATOR

O'KEEFE: Well, good afternoon.
This afternoon we got a mandate. And we got support for a set of specific objectives that very clearly identifies exploration and discovery as the central objective of what this agency is all about.
It has always been so. In 45 years of this agency, certainly that has been what an awful lot of that mandate's been about. But to have it emphasized specifically as a reason in and of itself for these purposes is the important dimension of what this policy is all about.
It will be informed by the science, to be sure. And there are science objectives you'll see, as we walk through in the months ahead in the course of discussion with our oversight committees in Congress, in the appropriations committees and the public at large, exactly what the aspects of this program will be in order to carry out those science objectives informed by those. But they're specifically driven by exploration goals.
And as the president outlined, this is a policy that is supported by what, in two weeks time, will be his budget projections and budget request to the Congress that not only will provide the assets, the resources and the capabilities necessary to carry this out, it is consistent with this policy and was devised specifically in order to be so.
There are occasions in which there are matches between what the policy objectives are and how the resource objectives will be entertained or considered at a later point.
This is an event where, again, an awful lot of the deliberation that went into this activity was specifically designed for the purpose of identifying the capabilities necessary to follow through on the charge, the direction and the guidance contained in this policy.
There is a presidential directive which, very specifically, defines those objectives, much as he discussed this afternoon and in greater detail. It will be the guiding policy focus that we will carry forth and follow up with at this point for the foreseeable future.
And to be sure, the five-year projection that's part of the budget release in a couple of weeks, again, provides specific program details that accomplishes that over that time.
But importantly, this is, again, about not specific destinations or those kinds of things that would identify by date certain. Instead, it is about the exploration goals, of building capacities in order to accomplish any of those exploration opportunities as time moves ahead and as we develop those capabilities to capitalize on that.
There's a chart I wanted to use very quickly. And I think there's a graphic that we'll use as well. It will give you a feel for the nature of what this transformation will be all about.
But the basic approach that's identified over the course of this time is within this five-year window is the budget profile overall that will be presented in a couple of weeks. And, again, at that time, there will be very specific program details that will accompany that.

But the objective will be to continue, as you heard the president identify, the shuttle program, with the objective of completing the International Space Station by the end of the decade and, at the point at which that completion occurs, to retire the shuttle at that time.
Nonetheless, it is projected to give you a indication of how this transformation will occur during this period, that as the shuttle retires there is a much greater use of the resources necessary in order to complete a crew exploration vehicle for the purpose of pursuing the exploration objectives that he identified.
The robotic technologies that are contained within the program as well also being developed for returns to the moon objectives to go beyond to Mars as we're seeing, matter of fact, graphically demonstrated today with Spirit and, soon, Opportunity on the planet Mars. So much like that, there will be follow-on robotic missions for those purposes to the moon as well as to Mars.
The exploration missions, again, will ever consume more of the focus as we move ahead, as we transform this throughout the balance of this decade and into next.
Based on the budget profile projections that will be submitted, with the horizon through fiscal year '09, thereafter, in order to sustain this effort, the working assumption is that it be a program that can be sustained at a annual rate that would increase by not more than the rate of inflation. That's projected throughout the course of the next decade.
So as a consequence, the primary resources that are necessary are occurring in this period, from '05 to '09, and then expanding as a consequence of the transformative efforts that are involved. This will involve a range of not only the kinds of mission objectives, capabilities, development of robotic as well as human capabilities, to be very sure -- the crew exploration vehicle is one of the primary assets to accomplish that -- but also to emphasize the power generation propulsion capabilities necessary to achieve these goals.
So we're re-ordering -- what you'll see in the program -- the very specified emphasis on the research on station to emphasize life sciences, human physiology, the human affects and consequence of long- duration space flight and develop the means by which to mitigate those consequences in order to facilitate the opportunity for broader exploration objectives of longer duration.
So as a consequence, all the inter-relationship between these factors will be built into this program for the purpose, again, specifically of pursuing the exploration agenda with the science to inform that set of goals as we move ahead.
Organizationally, this will require a different way of doing business within our agency. So the transformation will occur not only in terms of the emphasis and the policy guidance and the direction, the mandate that we have received and have been directed to proceed with by the president, but also we will organize ourselves in order to carry that out most efficiently.
What it will entail and what we'll release here in the next day is a reorganization of the agency to focus very specifically on the large-scale systems-integration systems-engineering challenge that it will take in order to develop the exploration tools and capabilities, both the vehicle, power generation and the propulsion capabilities to do so.
So we will create an exploration systems enterprise within the NASA framework that will, again, be on par with space flight, space science, earth science, biological and physical research, education and safety and mission assurance and aeronautics.
And so that will be promulgated promptly as part of our efforts in order to assure that we have the organizational means to carry out these objectives in a way that thinks about these challenges in the direction of large-scale systems integration, much as we did at earlier stages in our history, but using most beneficially the new technology that can give us the capacity to develop these means in a way that is, again, contemporary, rather than using what was required back in the '60s and '70s, the functional equivalent of brute force, in order to achieve the kind of capacity and capabilities that we did to get to the moon by 1969.
So much of what is going to be involved here I think is, again, to exploit the new technologies, new capabilities, new ways of looking at challenges within the context of an organizational framework which will be responsible for looking at this challenge as a large-scale systems-integration endeavor.
Much more to follow in the days and weeks ahead. Certainly there will be a lot more detail as the budget is released; there will be a lot more discussion of the specific programs.

But for this interim period, for the next couple of weeks, our focus will be on organizing ourselves, getting ourselves prepared for the specific effort: to hit the ground running right away to achieve what is now a mandate for the purpose of exploration and discovery that has been provided by the president of the United States today.
So with that, I'll take your comments or observations.

QUESTION: Will you look beyond Code M and beyond human space flight to find the $11 billion that you want for the new exploration goals?

O'KEEFE: Well, what the president defined and described was a consequence of this effort, of looking at the overall top line, the dollar amount. What you see in fiscal year '05 will be equating to about $16.3 billion and increasing at a rate of about 5 percent or a little more for the next couple of years thereafter.
But most of the adjustment, as he described it and discussed it or alluded to it, is a reorientation of efforts within the existing program, that while that is an increase, it also is a more significant one on a net basis as a consequence of the reorientation of various programs.
For example, again, the idea of the biological and physical research will be a very dramatic adjustment in the profile and program orientation of what's involved there, to emphasize the focus on life sciences, human physiology and human effects as a consequence of long- duration space flight.
Any other research that can be conducted on station, which is primarily what the focus of the biological and physical research endeavor will be concentrating to deal with, that have contributions to those challenges of long-duration exploration, expeditionary kinds of missions will also be emphasized.
But I think it's a safe bet that the dominant focus will be on that primary life-sciences priority.
So that is a very graphic example of where the resources were derived for the purpose of really focusing on that particular area as a predominant matter.
The same is true of many of the space science endeavors. Much of what we were involved with in the program that we have been pursuing were specifically oriented towards that exploration endeavors, those exploration objectives. And as a result, what you'll see in the budget as it comes out in a couple of weeks is a specific reorientation to those kinds of functions.
So, you know, wait for it. It'll be moving along and demonstrating it at greater depth as we identify it.

QUESTION: Question about the reprioritization of the focusing: Is the Aldrich commission -- if that's what you're going to call it -- will they be setting the ground rules or will CODE U *(NASA's Office of Biological and Physical Research)* do another re- map? How are you going to pick the winners and losers in cuts? And how soon will that be known?

O'KEEFE: That said, the focus of the president's commission will be to examine implementation strategies of this vision.
So the charge, the mandate, the terms of reference, if you will, of this commission is to take this policy objective, the presidential directive, the policy, the strategy, and the vision that's stated therein and provide it to this commission with the objective of them helping us to find what implementation strategies should we be examining to include a broader range of a variety of different commercial alternatives, looking at international participation, workforce challenges that we've talked about and will continue to be encountering as a consequence of the requirement to recruit and retain the kind of quality workforce that's necessary.
It will be a whole range of specific objectives that we'll talk about and provide very specific detail on their terms of reference.
But the question of what should the vision be, that which has dominated the public debate, certainly in the congressional arena as well as a consequence of responding to the Colombia Accident Investigation Board view that there be a national debate and a focus on the vision, and there be a provision of one.
This resolves the question of: What is the vision? This is what it is.

And so the commission will be in business to entertain a wide range of different alternative visions, it will be to how to implement this one in order to achieve the objectives that have been identified.

QUESTION: Can you tell us a little bit more about the crew exploration vehicle? What will lift it into space, and is it going to be an Apollo-like capsule?

O'KEEFE: Very significantly, I think we've got to avoid getting fond of a design. We ought to get fond of the exploration requirement and agenda of what it's supposed to do and invite the industry and other alternatives that may emerge, other ideas, of how to actually accomplish that and carry it out.
A lot of work has been done on the orbital space plane objectives to have it provide -- the objectives were, as you recall, to provide a return capacity in a period of time here towards the end of this decade, and by the turn of the next decade a transfer capability. And that's it.
In many ways, the Orbital Space Plane will become an opportunity to transition that concept to the crew exploration vehicle concept, to take that requirement for exploration objectives -- it was to be evolvable -- and make it the firs order priority now.
So let's go back and we got to re-think exactly how that requirement set should be organized in order to achieve this.
One approach and one method that we are very much attracted to at this point and will certainly achieve the objectives the president has directed is to engage in a spiral development program, which by increments, demonstrates capacities that are necessary.
And as you recall in his speech, he'd identified the first of those increments to be achieved, an unmanned capacity, if you will, by the '07-'08 time frame with the objective of then building toward the attainment of a human capacity for exploration vehicle kind of capabilities by the 2013 to 2014 time frame. And that was what will be specified in the presidential directive, as well.
So that'll take us several steps in this spiral development approach and there will be different ways to lift that capacity; there's isn't going to be a one-size-fits-all solution requirement to do that.
But again, as I referred to in the organization shift that I alluded to, the exploration systems enterprise will have the primary charge of looking at: What are the alternative approaches to do that, and how would we go about achieving those objectives in that manner?

QUESTION: Can you tell us about the workforce issue? Do you expect to be hiring, and if so, how many people and to do what?
O'KEEFE: There's lots of different ways to carry this out and lots of different options that we really ought to carefully consider in terms of how we can develop these kinds of means, whether it's performed in- house, by a variety of other kind of associations that we have with lots of different university relationships, whether it's an industry- driven approach, whether it's a commercial option.
All those will have different answers and different implications of what that number would be in terms of personnel.
But our immediate challenge that we've sought to identify in the course of the past year and a half to our friends in Congress is that we have an immediate challenge, right now, facing us: The better part of a quarter of our workforce eligible to retire in the next three years.
And so a part of what we have attempted to send forward and have advanced to the Congress is legislation in order to recruit not only new hire from graduate schools in engineering-, technology- and science-related fields, but also to look at mid-level entry from a variety of other kinds of disciplines and backgrounds that would provide the kind of disciplines and professional capabilities that we need in order to achieve these objectives, as they become more apparent over time.
So far the Congress has been deliberating on it.
The Senate passed a version of that just before they left town in December. The House is still deliberating. We hope that the House will deliberate promptly and come to a conclusion and vote to enact those capabilities as quickly as they possibly can so we can begin using those tools to address what is really going to be a very dynamic demographic kind of adjustment in terms of

disciplines, professions and fields that we're seeing retiring in very large numbers in certain skill-mix areas that are really going to be difficult.

QUESTION: On a budget question, what is the base on which you add that $12 billion over five years? And secondly...
(CROSSTALK)

O'KEEFE: Zero. The notion is you start at where we are right now, enacted level or it could be enacted, assuming the Senate passes the omnibus appropriations act on or about January 20th, as the president's asked, it begins at a level of about $15.3 billion, the $15.4 billion neighborhood. Second one?

QUESTION: Getting back to the issue of the vehicle, I know you're not locked into any design, but are you looking for a reusable vehicle or something more along the Apollo line?

O'KEEFE: We'll see.

QUESTION: What's your plan for engaging foreign governments in this plan, specifically the Russians and their involvement?

O'KEEFE: Well, last night and this morning I had the opportunity to speak to my counterparts with the heads of agencies, if you will, of the International Space Station consortia, from the European Space Agency, from Rosaviakosmos, the Russian Space Agency, the Canadian Space Agency. And the enthusiasm and interest in opening up the dialogue about what the degree of international participation could/might be in the very near future here as we discuss this is pretty high.
And I think the enthusiasm they expressed to me was, they're anxious to have an opportunity to begin to see the detail of where we're going with this and where there may be opportunities to collaborate.
If any of us had any doubt about the utility of the international cooperation and its depth of, I think, commitment, the fact that the partnership has hung together and continues to operate International Space Station today as a result of all of the partners stepping up in the wake of the shuttle fleet grounding as we have worked through the challenges and the tragedy of Columbia, that demonstrates that there is lots of interest there, and capability there, in order to perform in that manner.
So in the time ahead, I think we'll see more and more of different ideas of what they'll be exploring and looking to, to look at cooperative arrangements and partnering arrangements. And we're looking forward to engaging in that discussion.

QUESTION: How will the agency re-allocation and re-focus specifically affect the Earth science endeavor? What's fair game for being reallocated, redirected, cut? What's off limits? And should there be concerns within the Earth science community about this?
Again, a specific budget detail will come out here in two weeks. But I can tell you that the priorities that are very clearly emphasized there -- looking at the climate change research initiative and all the assets that we have developed in Earth science in order to support that over time, our cooperative arrangements with other federal agencies in order to improve forecasting, and a range of other capabilities -- those are all continued.
So, in terms of the prioritization of the Earth science agenda, there is clearly no diminution of that importance and significance of what we're engaged in there, at all.

QUESTION: Looking at your chart, taking the top three categories, eyeballing it, it looks like through FY '20 you're looking at about $150 billion, $160 billion. Do you have a total through FY '20, price tags, since people like to know how much something costs before they buy it?
And since NASA has a history of cost overruns, looking at the International Space Station, how is this going to be different?

O'KEEFE: Don't treat exploration missions as if it were one program. It's a variety of different programs. You've got robotic, human capabilities, vehicles, probes, again, robotic exploration vehicles towards lunar missions. There's a range of different capabilities, all of which are different and discreet kind of programs.
Much of what's built into this, as well, is what we have pursued in the last couple of years, Project Prometheus for power generation and propulsion capabilities.
So, in so many ways, it is really refocusing agendas towards these specific mission outcomes with the goal of following through on the policy objective that was enunciated this afternoon of exploration and discovery.
So this is not a program per se. It's a way of kind of slicing and dividing, providing a division of how the information should be relayed.
And so rather than saying it costs this much to here or that much to go there, it's going to by the same thing we normally do -- by program. And so each program will discretely carry its own price tag.
So I think that's a most appropriate way to consider it.
In terms of our performance and why we think this is a credible resource approach to this, I think our performance on International Space Station, on other major programs that we've seen of late, in the last couple of years, is very much in line with and was one of the reasons why the president raised his confidence in the view that we have a credible program that's compelling and it is responsible.
And so as a consequence, the approach that's been laid out here, by our performance, will do that.
What you'll also see, coming forward, as part of the budget presentation here in a couple of weeks time is where everybody racks up on the five president's management agenda objectives. And we exceed or advanced in four out of five of those categories pretty impressively.
So, as a consequence, by our performance, the view is that we have established the credibility necessary in order to achieve this. And so we're going to keep giving it our best shot and best effort as we move along.

QUESTION: With the crew exploration vehicle, what's the line of thinking on how to do cargo? Is Shuttle-C or concepts like it back on the table? Or is that still fluid as well?

O'KEEFE: Yes, that's a dimension of what we're going to have to lay out here, of how you provide cargo capabilities. And there are those kinds of options on the table: Do you use, you know, a range of different assets for those purposes, or do you look at developing very specifically through commercial, entrepreneurial means, whatever, a variety of different cargo lift capabilities that have been discussed, advertised and talked about there.
I think this is going to put a premium on innovation, creativity, different ways of looking at challenges and different ways of accomplishing those objectives.

QUESTION: As you know, much of the shuttle infrastructure dates from the Apollo period. How will you go about deciding how much of that infrastructure to convert to the CEV and how much of it to close down?

O'KEEFE: It's going to be a challenge trying to work through the best approaches on how to do that. But again, there is a span of time here in which there is an opportunity for consideration. Launch services and launch operations will continue with the objective of completing the assembly of the International Space Station.
So that's going to continue to require a lot of our, a lot our effort. And it's going to put the first-order magnitude premium, as the president defined this afternoon and is contained in the presidential directive, on our return to safe flight as safely as we can do as humanly possible and in the time frame that begins to get on with the task of achieving the assembly completion and construction of the International Space Station.
So to do so, that then is going to take some thought in terms of how you transition that. But over time, you got to launch a crew exploration vehicle. How you develop it, produce it, follow through

is the point that's going to be open to lots of different creative ideas we're going to have to examine here in the months to come.
But again, we're not starting with a clean sheet of paper. We've had a very constructive, productive, important set of issues that I think were run to ground as a consequences of the Orbital Space Plane considerations in developing requirements.
In so many ways, there are opportunities to derive a lot of learning from that experience and apply it very specifically to how we treat the CEV, in terms of requirements determination and, in turn, how you develop and then produce that with the notion of the spiral- development approach to this.

QUESTION: Two quick things. First, you've referred several times to this presidential decision directive that came out today. I don't think we've seen that yet. Are we going to? That seems to be the basic document that you're working from.

QUESTION: On the international side of it, it sounds as if the potential partners who you have discussed this with in the past two days could come in as significant funding sources for this? And would they also be given a vote in the future direction of the program? Or are they being presented this program and told, "You may join it or you may choose not to join it"?

O'KEEFE: Well, I think it is very much going to be a U.S.-led endeavor. That's our intent. And, again, much of what we have been directed and what the president envisions we do is to achieve this set of American, U.S. exploration objectives.
To the extent we can do this collaboratively, cooperatively and in partnering with international participation, we are encouraged to do so. And there is enthusiasm from our partners in examining the ways that they can do that productively.
So I think we have always been and will continue to be open to varying alternatives that our partners and our collaborators of an international nature may suggest. And we'll continue that way.

QUESTION: (OFF-MIKE)

O'KEEFE: Sure. I mean, in terms of launch capacity and so forth, there's a number of capabilities that we will continue to work with them. And that, certainly, is going to be a working (inaudible) as it has been, through the partnership council that we have very actively engaged in over the course of the last couple of years that I've been here.

QUESTION: The president really didn't give a general time line for a Mars human expedition. What's your sense of when that might occur after the manned moon missions get started? And Mars seems to be low in the background noise today, and I'm wondering if you could, sort, of talk about that too -- why that is?

QUESTION: Well, for people, for human expeditions.

O'KEEFE: Oh, no, no...

QUESTION: The president didn't seem to stress that too much.

O'KEEFE: I think quite the contrary.
The objective here is, as he outlined and what you'll see in the directive very specifically is that there is an emphasis on using the moon as a capacity in order to develop the infrastructure, the staging, whatever may be necessary.
And that's really going to be challenging to determine -- and will be a range of options on how deep or how wide that infrastructure or capability or staging capacity would be, in order to then continue the exploration agenda throughout the solar system. And our principal destination is Mars, to be sure, and that's why we're there right now.

And this is the precursor mission we're seeing now, in the form of Spirit rover and Opportunity to join it, that is exactly consistent with the exploration goals and objectives that have been identified here.
So I would say that there is a very strong emphasis along the way here toward developing these capabilities and making those choices on when you proceed, informed by those specific accomplishments of the development of the technology to achieve that as they develop over time.
So when that may be achieved, it really depends on how successful we are at, again, developing and producing the crew exploration vehicle in the timespan we're talking here, determining exactly what the extent would be of the staging, the interim steps to lunar expedition that may be required.
And then thereafter, you could envision a earlier objective to press on to Mars. Or you could see something that may take a longer time, depending on one of the factors that the International Space Station dominantly now will be focused on in a research agenda, which is, again, human effects.
To the extent we can't figure out how to conquer the challenges of long-duration space flight, that becomes a limiter on how rapidly you can proceed in that regard.
So I could envision and anticipate great successes that could come early that would inform that kind of choice early. Or it may be something that becomes a long pole in a tent that takes longer time.
So rather than speculate on when that is, it's milestone-driven in terms of how you achieve that task.

QUESTION: You don't want to bookshelf it as early as this or as late as that?

O'KEEFE: No.

QUESTION: I wanted to return to the infrastructure question. You mentioned there is an opportunity for a lot of creativity as NASA moves toward the crew exploration vehicle, in terms of launching and what it looks like. Can you envision Kennedy Space Center not being NASA's primary launch facility?
And secondarily, there's a big window between 2010 and 2014, shuttle retirement, crew exploration vehicle launch. The folks down at Kennedy are probably looking at that and thinking it's going to be awful quiet down here during those four years.

O'KEEFE: No, for two reasons. First of all, I think the capacity we have right now for launch services is limited. As you look at the capabilities that we have nationally, there are only a finite number of sites in which you can do this.
So as a matter of geography, it is hard to imagine launch services not occurring there in the future if you continue along with the approach of vertical-launch approaches that are necessary to achieve these goals because there aren't, as in finite, single-digit number of other places you could go. And given all the other factors of operational consideration, there are few that are more ideally suited than where it is. And that's why it's there for a reason.
Thereafter, again, remember the spiral development that will be going on in order to develop the crew exploration vehicle in an aggressive time frame that we're looking at here and is called for by the president's directive of yielding the first of those developmental steps for a spiral development approach as early as '07, '08, requires it to be launched.
And so, therefore, when you're looking at a number of those cases through the time that you actually have developed and produced and regularly operate a crew exploration vehicle, there will be several different capabilities that need to be tested, demonstrated, et cetera, that will require, I think, the competency and services that we currently enjoy.
Whether it's at the same rate and level, who knows? We've got several years for which we're going to have to sort out that question in terms of what the ultimate answer is.

QUESTION: In the period between the retirement of the shuttle and the (inaudible) of the crew exploration vehicle, will U.S. astronauts continue to fly into space? And how will they do so?

O'KEEFE: Well, again, between the time we return to flight and the completion of the station, the fly-aboard (ph) shuttle -- as we've demonstrated over the course of the past year, our Russian partners have excelled at assuring the flight through Soyuz spacecraft of three-person crews, or, in this period of time, two-person crews, in order to accomplish that task over this period. So we've got the capacity to do so, and it's complementary, if you will.
We're going to have to really look at what that access to station needs to be and how we would enhance that and negotiate that as a matter of opportunity with our partners. Because they've got a vested interest, given the fact that there is a crew-enhancement requirements they're looking to in order to really accelerate.
Once those modules are there, they want to use it for the research yield. So it's going to require a larger crew size.
So part of what's really going to challenge the space flight community -- and I think they're very excited about this. I met with the astronaut corps Monday evening about, kind of, thinking through some of these challenges. It basically means we're going to have to think about what the rotational schedule is for expeditionary crews: how many should it be; what number; how you accomplish that task; what duration those missions will be; whether they are overlapping. You could look at surge capacities in a variety of cases.
And then you answer the question of what launch requirements, how many seats you need in order to meet that requirement and demand.
And so that's the way we're going to go about doing it: thinking about what's driving the requirement for numbers of people in order to accomplish the research and science aboard station and answering the question by our negotiation among all of us as a partnership. Because we've all got a vested interest in this, of how we would achieve that given these other operational factors that I've just talked about.

QUESTION: Can you assess the role of Marshall Space Flight Center in all of this, specifically the propulsion-related research that is going on there and whether that would be of any value?
O'KEEFE: Absolutely. Again, I think the approach that we are very much focused to and in charging an exploration-systems enterprise, an organizational structure that's going to look at large-scale systems integration of vehicles, power generation and propulsion capabilities, that certainly has a lot of core competency that is resonant right there at Marshall.
So as we look at how we transform the requirements here, this is going to take some time, you know, to sort out exactly what that means in terms of every name, rank and Social Security number involved. But there is an awful lot of really great capabilities across the agency.
It's going to be a dynamic time as stovepipes by individual centers or by individual enterprises. It's going to be a dynamic time. And it's one we've really been looking forward to and working on hard in order to emphasize that depth and degree of collaboration that will be required to achieve this.

QUESTION: The large-scale systems integration that you envision to accomplish the new missions emphasizing discovery and exploration, is it fair to infer -- or at any rate, to speculate -- that this will mean some changes in mission for all the centers -- Marshall, Houston, JPL, whatever -- and that this will involve changes in staffing and budget allocation and so forth?
In short, everything's up for grabs, isn't it?
O'KEEFE: Well, I'd hardly say it's going to be up for grabs, but it sure is going to be a different way of looking at these problems. And it doesn't mean that everybody says, "OK. Put your pencils down. We're have to figure out what you're going to do from this point forward."
No. It's going to be lots of challenges to come, lots of things to do, lots of important objectives to achieve and lots of opportunities for all of our colleagues across this agency to participate in that.
Is it going to be different? Yes. No doubt about it. That's definitional by this kind of a description of what this means. When you're focusing on, again, exploration as a primary set of objectives we're seeking to achieve, it forces you to think in totally different ways about how to achieve that objective.
It isn't about, you know, stand-alone efforts; it's about how do you integrate different programs and different ways of looking at the problem in order to achieve an entirely different outcome that might not have been possible.

So it really is going to be a follow-on to what we've been working on pretty hard, though, in the last year in order to really expand the level of collaboration across the agency. And that's going to have to sort its way through. But at the same time, we've got a depth of talent that will be absolutely invaluable for achieving this goal. And I know we can do this because we've got the capability across the board. And most importantly, the president confident we've got the talent, the capability, to go carry it out, and we're very excited by that.

QUESTION: I know we're very comfortable working with our space- station partners. But during this decade both India and China are planning to send unmanned missions to the moon. So I'm wondering if we're going to be offering to them to participate also in this program.
O'KEEFE: Well, it poses some interesting questions. And it certainly opens up the opportunity. And I think the expectation that the president has, in all of the discussions we have had leading up to this set of decisions of what this direction is, is that we look at this differently. We think about these challenges in different ways.
And so there is, I think, an opportunity to kind of open that debate. Who knows?
I wouldn't want to speculate on this outcome at this time, but I sure know that there isn't a finite answer that would suggest one way or the other at this juncture. That's kind of exciting.

QUESTION: Former President Bush made a similar announcement in terms of long-term strategy for the space program, albeit, more vague. How can we be confident that the announcement today has a better chance of being fulfilled and successful?
O'KEEFE: Sure. There are those who would advance and have advanced the notion that if you simply articulate a strategy and a vision of what a set of goals should be that, as enunciated by the president, will be sufficient in order to propel this kind of a view.
And the primary source of credibility on the validity of that point is none less than President Bush, 41, himself, who when I spoke to him said, "Do not under any circumstances," -- this is when I first discussed some of these things with him just as a matter of intellectual curiosity the better part of a couple of years ago, a year and a half ago, or so -- his view was, "Do not let that argument sustain itself to the extent anybody is pushing that because it really does require that you develop the content and go resolve some of these broader questions of how you'd achieve some of those goals and objectives as part of that objective."
And so the very clear direction that was achieved and was provided by President Bush, 43, in this particular case, was to come up with an achievable set of outcomes that we believe is an aggressive strategy, that is an important set of goals and objectives that we want to achieve that focuses, first and foremost, on the exploration agenda and that does not require either an invention, a suspension of the law of physics, a miracle, a leap of faith.
Having gone through that challenge over the last several months, and demonstrating to him at a very high order of what his expectations were, the advice from his father, 41, I think earlier on -- again, which is a totally separate issue; it wasn't a case of he was asked or consulted about how we proceed with this -- but just his general philosophy really influenced my view that that's precisely the direction we needed to go.
And it influenced all of our view. This is the nature of what this administration is all about. How the president makes decisions is to be very clear about how you intend to achieve these goals and be as focused about how you've accomplished that task as you can be. And that's what that does.
So I think that raises the confidence bar substantially over the articulation of what should be a general policy framework or outcome that we want to look to. It has to have the content in order to make it something.
It now becomes a very hefty debate. Now, of course, the major issue that's still open for debate, of course: Is the Congress is going to have a very important role to play in this? Are they going to view this as being the appropriate way to do it? And I think the president's confidence is very high that they will, or else he would not have proposed this.
And so that's going to be our charge: To lay that out and make it very clear to them. But there is something more than, "We'll be back to you after we finish the study" to present. On February 3, the budget will be there that describes it and it goes out over the course of the next five years. And the logical progression thereafter is illustrated.

That's going to be the nature of the debate as to whether that's the right composition or not. And we're going to do our best to advance just that.

QUESTION: Your answer to whether or not the crew exploration vehicle would be reasonable was look a little bit vague, implying that it was too early to tell. But can you tell us whether you've budgeted in this forecast for a certain number of vehicles, for one vehicle? Is there any specifics there?
O'KEEFE: No. I wasn't intent on being vague. It was more intent on being flexible, being adaptable and not being stuck in a single-point solution of what exactly will be the characteristics of this asset.
This is a logical transition from that. And being able to capitalize dramatically on a lot of what we learned from that experience, that really worked through a set of options on what characteristics are necessary, they are going to be very common with so much of what's involved here.
Some of the mission requirements are different, to be sure. The exploration vehicle has got a very different set of requirements ultimately that will be driving other considerations, too.
But some of the baseline foundation assumptions are very, very similar in terms of thermal protection systems and a range of other capabilities that you'd want to see embodied or embraced within this.
And so this represents the development and production cost. Finite numbers of how many becomes a negotiable factor when you getting at it this way. And we'll see exactly what that proves to be, based and informed on the success of the spiral development program early on and several stages leading up to a human-rated capacity to achieve that.
And that really becomes a means to, kind of, identify what those resources are that may be available to do this and be flexible enough to adapt to what that number may prove to be, ultimately.
So I think we're trying to avoid being fixed in a particular position on that, instead be informed by the results once we proceed down this road.
I guess this is a general proposition and an overall observation anyway. And it applies to this question as well as other issues that we've explored here a little bit, too.
Remember, there isn't a whole lot of baselines for doing this. There isn't a condition in which you look at a benchmark, "How did someone else do it?" We're it.
And so while there may be parallels to earlier development efforts -- Apollo, to be sure, and the staging approach that was done with Mercury, Gemini, Apollo, that the kind of approaches that were taken there, that is an interesting kind of parallel to look at and maybe a strategic kind of benchmark to examine, but it nonetheless is a totally different kettle of fish.
I mean, the idea of going back to do it precisely that same way is not recognizing that in the last 35 years technology has advanced significantly since that period.
So how we then look at that set of requirements for exploration, vehicle capabilities and power generation and propulsion capabilities, gets us out of the mode of I think a series of working assumptions that were applicable then.
It changes the dynamic very dramatically today in using those -- very dramatic technology advances have occurred, gives us a new opportunity to follow up on this new mandate, which is going to be an exciting time. It's one that we're very, very excited about being part of and very pleased that the president's direction is as confident in our abilities to do so.
I thank you all very much. Appreciate it.

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